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NOTES ON KNOWN GREGARINES *

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The following notes relate to the systematic position of two known species of gregarines. In the one is described and named a species seen but not named by Leidy; in the other is substantiated the determination made by Crawley for a species which he named from two of the three essential characters.

LEIDYANA LEIDYI Kamm *nov. spec.*

[Figures 1, 2, and 3]

Host: *Nyctobates pennsylvanica* deGeer

Habitat: Intestine

Location: Urbana, Illinois, December, 1916

The sporont of this species (Fig. 1) is long and slender, tapering at both ends. The protomerite is only half as wide as the deutomerite at the widest portion; it is slightly constricted at the septum and terminates in a blunt point. The deutomerite is widest in the shoulder region, i. e., a short distance below the septum, and tapers from thence to a long cone blunt at its extremity.

The epimerite (Fig. 3) is a spherical, sessile knob placed at the apex of the protomerite of the cephalont.

The nucleus, obscured in life by dense protoplasm, is spherical and small, situated generally above the median portion of the deutomerite; it contains from one to five large, irregular, deeply-staining karyosomes.

The endocyte of the deutomerite is dense, staining dark and homogeneous, while that of the protomerite is less compact and consists of much larger protoplasmic granules. In transmitted light, the protomerite appears deep tan in color, while the deutomerite is black in the upper portion and gray-black in the lower where the protoplasm is less dense. The epicyte is clear, much thicker in the protomerite, especially at the sides of the septum and in the apical region.

It is apparent that more than one species of gregarine parasitizes this host-beetle. Leidy (1889) describes and illustrates *Asterophora*

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philica from this host, an attenuated species having for an epimerite "a horizontal circular disc with a round, milled border." The species attains a length of two millimeters, with a ratio of length protomerite to length deutomerite of one to fifteen, and that of width protomerite to width deutomerite of one to one and three-tenths. From an unpublished manuscript of Leidy on gregarines, Crawley (1903a) copied three figures (Pl. III, Figs. 31, 32, and 33), supposedly of the same species, *A. philica*, and taken from the same host-beetle as above. While doubting the authenticity of their relative positions as assigned by Leidy, Crawley does not attempt to further classify them because of the slender evidence, calling all three *A. philica* as done by Leidy.

In my thesis (Watson, 1916) the fact was mentioned (p. 144) that the first of the figures represents undoubtedly the species *A. philica* originally seen as described by Leidy in 1889, for the shape, propor-

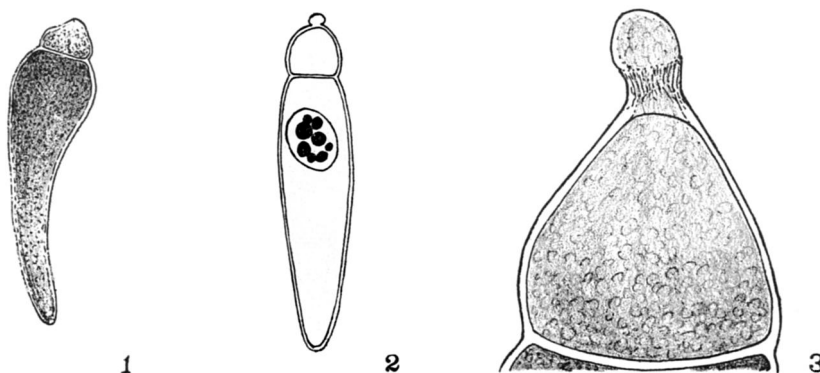


Fig. 1.—Sporont of *Leidyana leidy* nov. spec.

Fig. 2.—Sporont copied from Crawley (1903a, Pl. III, Fig. 32).

Fig. 3.—Protomerite with epimerite, oil immersion.

tions, and furrowed-disc character of the epimerite agree in the two. It was further mentioned that the second drawing in the Crawley paper (reproduced in this paper as Figure 2) "may or may not be a cephalont of the same species." But, from the data presented above, it is now evident that this cephalont, which has a sessile knobbed epimerite, represents not the same species as the first drawing, but another, the chief differentiating character being the epimerite. In *Asterophora philica*, the epimerite is a horizontal, peripherally milled disc, while, from the abundance of epimerited specimens which I have seen, it a simple spherical knob with no trace of corrugations event under oil immersion. Therefore, the second of the drawings in the Crawley paper and the specimens I have seen correspond and

represent a species which is not *Asterophora philica* Leidy. Below is a table of the contrasting features of the two species:

	<i>A. philica</i> (Leidy 1889)	<i>Leidyana leidy</i> n.sp.
Sporont, maximum length recorded	2000 μ	300 μ as recorded by Crawley from Leidy's Mss. 550 μ from my specimens
Maximum width....	150 μ	180 μ
Ratio LP:TL, maximum	1:15	1:11
Ratio WP:WD, maximum	1:1.3	1:2
Epimerite	A flat horizontal disc with milled border	A smooth, spherical knob

While it is true a single species may undergo decided changes in different environment and even within the same host, yet certain characters are fixed and are used in differentiating species; one of these is the character of the epimerite. It is because of this deviation of the epimerite from the named species that the writer assigns to the specimens seen by Leidy and illustrated by Crawley and to those taken recently a new name.

A new genus has been named to include species living solitary in the sporont stage (until the actual time of cyst-formation), having spherical cysts, numerous spore-ducts, dolioform spores, and a simple globular sessile epimerite, as *Leidyana* (Watson 1915), differing from the genus *Gregarina* only in the fact that the animals are solitary instead of biassociative during the sporont stage. In the absence of any data concerning spores and cysts, and because these two genera alone among known gregarines possess simple knobbed epimerites, the present species is placed in that genus as a new species, *Leidyana leidy*.

A table of measurements of the new specimens in microns follows:

Length protomerite (without epimerite, if present)	20	23	50	50
Length deutomerite	150	187	400	500
Length epimerite (if present)		10		
Width epimerite		10		
Width protomerite	24	40	120	70
Width deutomerite (maximum)	140	75	180	140
Total length sporont	170	220	450	550
Ratio LP:TL	1:8.5	1:9.6	1:9	1:11
Ratio WP:WD	1:1.6	1:1.9	1:1.6	1:2
Ratio LP:TL (Crawley's copy of Leidy's figure of cephalont)		1:6		
Ratio WP:WD (Leidy's figure)		1:1.2		

ACTINOCEPHALUS HARPALI (Crawley)
Gregarina harpali, Crawley, 1903a: 49-50
Actinocephalus harpali, Crawley, 1903b: 637-38
 Host: *Harpalus caliginosus* Fabr. (Carabidae).
 Determined by Adam Boving
 Habitat: Intestine
 Location: Atlanta, Georgia, July, 1916

This species, already described, is mentioned here because the epimerite has not heretofore been seen. Crawley has adequately described the sporonts, cysts, and spores, the only stage not seen being that of the cephalont.

The epimerite of the cephalont consists of a small flat disc at the apex of the protomerite and surrounded by a corona of six to nine short, broad, digitiform processes, conforming with that of the type species of the genus in which the species was placed.

This addition to Crawley's description confirms his disposition of the species and completes all the specific characters by which a species is recognized.

That the distribution of the species is rather extended is seen by the fact that the two localities from which it has been taken are Pennsylvania and Georgia.

Additional data is given as to measurements, since the original description mentions only the length as from 225μ to 700μ . Dimensions are in microns.

Length epimerite, if present.....	20	20	40	
Width epimerite	60	50	50	
Length protomerite, without epimerite	150	170	170	210
Length deutomerite	610	730	880	890
Total length sporont	760	900	1050	1100
Width protomerite	210	170	200	180
Width deutomerite	250	250	250	200
Ratio LP:TL	1:5	1:5.3	1:6	1:5.2
Ratio WP:WD	1:1.2	1:1.4	1:1.2	1:1.1

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